

(No Model.)

J. DAVIS.

APPARATUS FOR TANNING HIDES.

No. 313,478.

Patented Mar. 10, 1885.

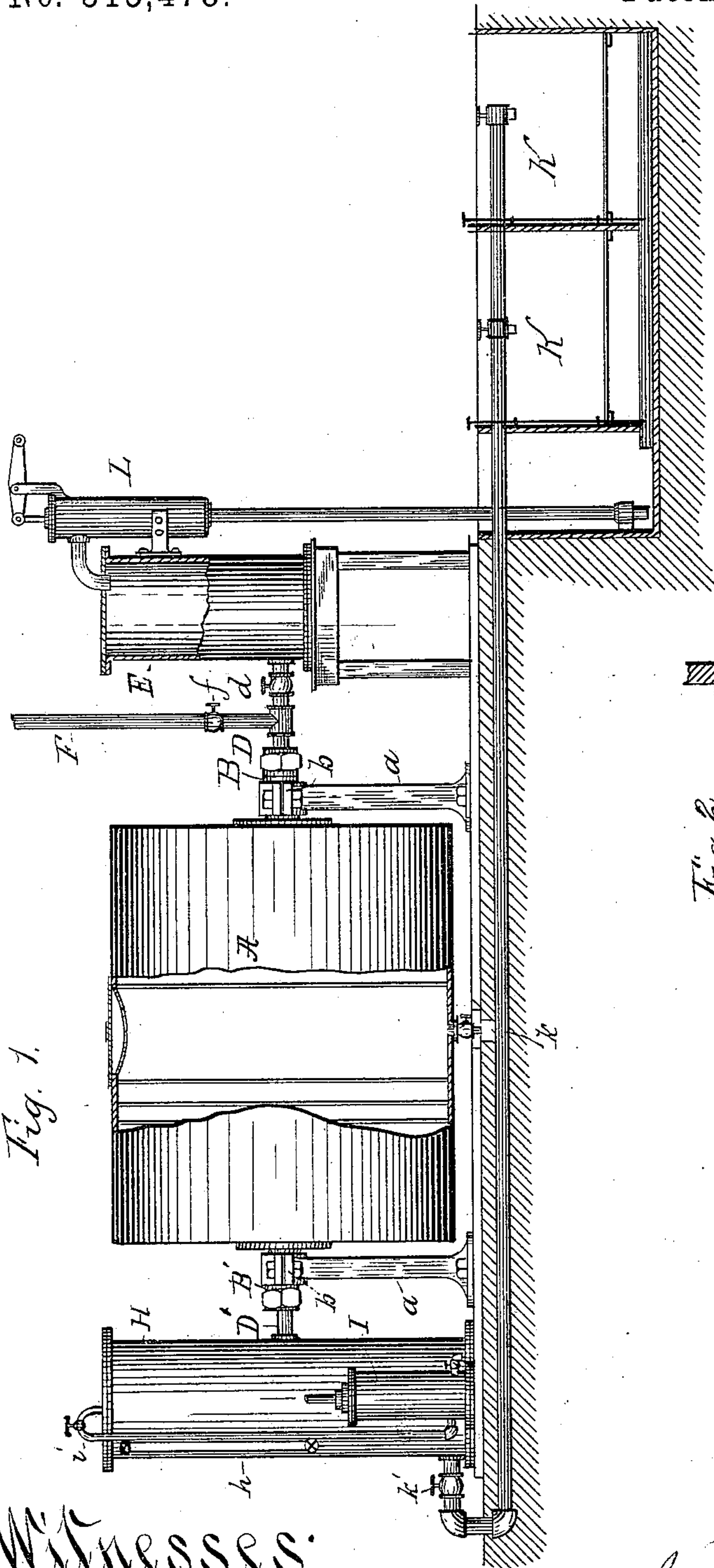


Fig. 1.

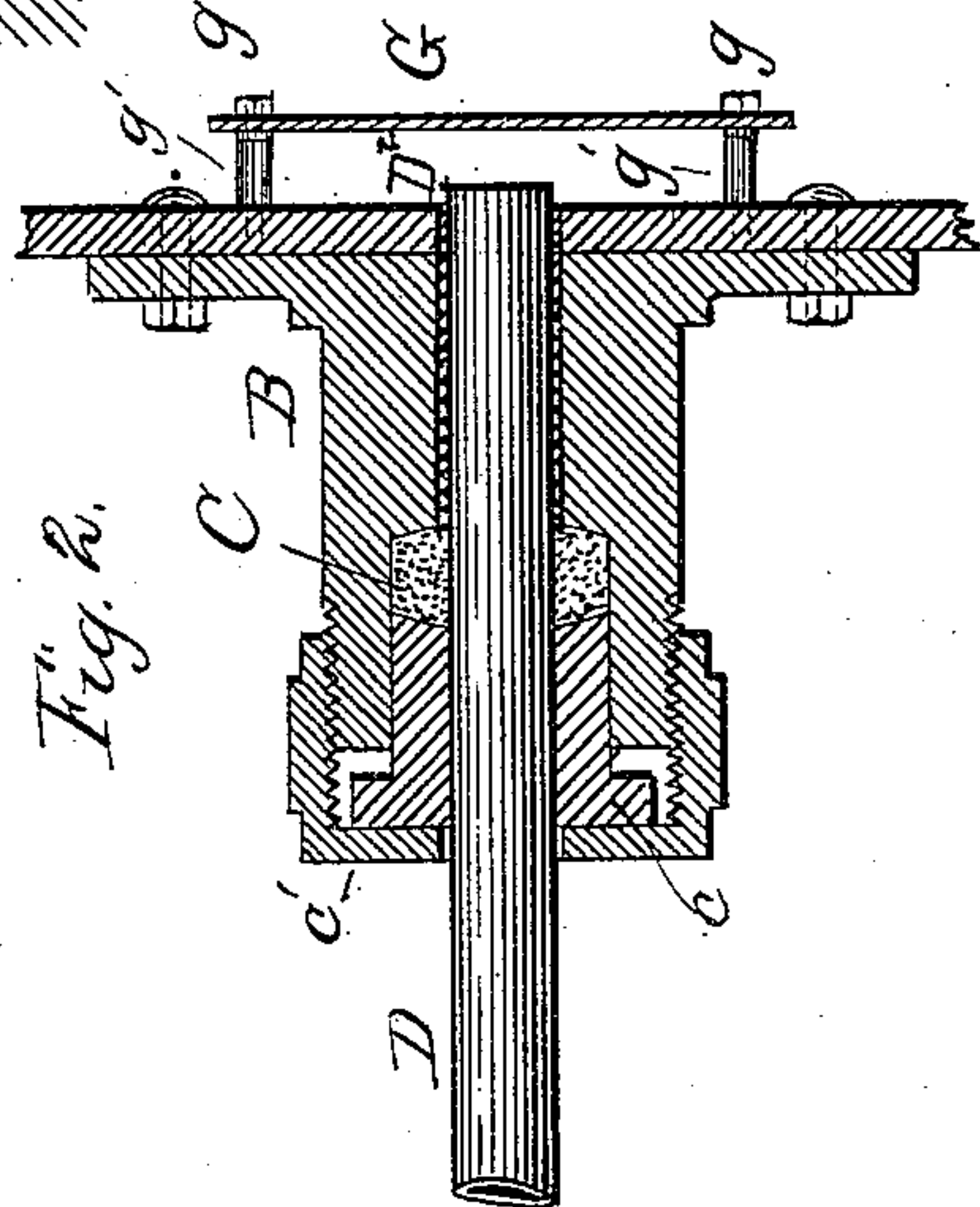


Fig. 2.

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APPARATUS FOR TANNING HIDES.

SPECIFICATION forming part of Letters Patent No. 313,478, dated March 10, 1885.

Application filed July 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN DAVIS, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Tanning Hides, of which the following is a full, clear, and exact description.

The object of my invention is to tan hides in a short space of time and with but little manual labor.

The invention consists in the apparatus hereinafter set forth.

In the drawings, Figure 1 represents a front elevation of the apparatus, and Fig. 2 a longitudinal vertical section of one of the vat-heads and parts of the apparatus.

Similar letters of reference indicate corresponding parts throughout the different views.

A is a cylindrical vat, transversely across which the hides are stretched and secured.

B B' are two hollow metal trunnions, provided with annular flanges, by means of which they are bolted to the heads of the vats. The trunnions rest in bearings *b*, carried by the frame-work *a* of the apparatus. The trunnions are recessed at their outer parts to give space to packing C, and between the packing, and extending to the inside of the head, a brass pipe, D², is fixed to the pipes D D', constructed of an alloy of copper and tin or other alloy or metal unaffected by tannic acid. The pipes D D' pass through the centers of the trunnions and connect the vat A with reservoirs E and H. Said pipes are surrounded by packing C, and rings *c* and screw-caps *c'* force said packing firmly in place. The object of this construction is to prevent the tannic acid from acting on the trunnions and also to form fluid-tight joints.

F represents an air pipe or duct connected with the pipe D and provided with a cock, *f*.

d represents a like cock in the pipe D, between the air-duct and the reservoir.

G are guards situated within the vat a short distance in front of pipes D D', and secured to the vat-heads by means of alloy bolts *g* and interposed washers *g'*.

The object of the guard is to prevent the tannic acid and air from being discharged directly against the nearest hide. The guard causes the liquor to flow to the bottom of the

vat, from whence it is distributed by the vat's revolution.

The trunnion B' is constructed in a similar manner to trunnion B, and the pipe D' connects it with a reservoir, H. Said reservoir H is air-tight and provided with a glass gage, *h*, by which the height of the tannic liquor in the vat is indicated. A pipe, *i*, connects the reservoir with the air-pump I, by means of which the air may be exhausted from the vat.

K indicates the leaching-vats, which are constructed with perforated false bottoms, the chambers beneath said false bottoms being connected with the pump chamber or pump by a pipe provided with valves, whereby the liquor may be discharged from any or all of said vats. A pipe, *k*, connects the reservoir H with the upper chambers of the leaching-vats, and is provided with a cock, *k'*.

L is a pump, by means of which the tannic liquor held in the lower chambers of the leaching-vats may be forced into the reservoir E.

The tanning-vat is revolved by means of a belt (not shown) passing from a pulley around the body of the vat.

The method of working the apparatus and the process of tanning is as follows: The hides are secured within the tanning-vat stretched from side to side. Sufficient space is left between any two of the hides to allow for a free circulation of the tannic acid when the vat is revolved. Tan-bark sufficient to supply tannic acid for the completion of the process is placed in the upper chambers of the leaching-vats, and water is poured upon the top of the bark and allowed to percolate through to the lower chamber. The pump L is then operated and the tannic liquor, which has been previously warmed, is forced upward from the leaching-vats into the reservoir E. This liquor should be pumped up from the leaching-vats (at the beginning of the operation) when it possesses about two or three degrees of strength by the barkometer. From the reservoir E the liquor passes through the hollow trunnion B into the tanning-vat. When the latter has been about half filled, it is revolved, and the hides are thus alternately exposed to the action of the tannic acid and the air. After this has been continued for a time, the cocks *d*, *k'*, and *f* are closed and the air within the vat is exhausted by means of the air-pump I. The vat, still

revolving, subjects the skins to the alternate action of the tannic acid and the vacuum. The latter causes the pores of the hides to open and allow the escape of the exhausted liquor. At 5 each immersion of the hides the pores are filled with the acid, and upon rising from the liquor the pores are opened and ingress allowed to the air. After this operation has continued for some time the cocks *d*, *f*, and *k* are opened 10 and the air-pump worked, whereby a constant current of fresh air is forced through the vat. These operations of alternately subjecting the hides to the action of the liquor and the air, and to the action of the liquor and a vacuum, 15 are continued at intervals of about one hour each for a considerable time, say twelve hours. The vat is then preferably filled entirely with liquor and either revolved or allowed to remain at rest, at the discretion of the operator, 20 for several hours, and the foregoing operation repeated again and again until the tanning is complete. At intervals during the process the pump is used and liquor forced up into the reservoir E and thence into the vat, the 25 exhausted liquor passing out through trunnion B' into reservoir H, and thence into the leaching-vats. The constant passage of the liquor through the tan-bark gradually increases its strength until finally it reaches a high degree. 30 The operation is so conducted as that this degree of strength will only be reached shortly before the completion of the tanning.

It will be understood that the whole process is preferably conducted with warm liquor; but I do not mean to confine myself exclusively to 35 such use of warmed liquor.

I am aware that it is not broadly new to confine hides within a revolving cylinder and subject them therein to the alternate action of tannic acid and air; nor is it broadly new to 40 exhaust the air from such a cylinder during the process of tanning. This I do not claim; but

What I do claim, and desire to procure by Letters Patent, is— 45

1. The combination, with a vat, A, a supply-reservoir, and hollow trunnions B, of a brass pipe, D², extending from the packing-chamber to the inside of head, a non-corrosive pipe, D, and a packing, C, whereby said trunnions may 50 be prevented from contact with the acid, as described.

2. The combination of the vat A, reservoirs E H, air-pump I, pipe *k*, leaching-vats K, and suitable pipe-connections provided with cocks, 55 whereby the tannic liquid may be transferred back and forth between the vats A K, so as to increase in strength as the operation progresses.

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Witnesses:

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